Math 3325 **PRINCIPLES OF MATH** Fall 2017
Dr. Duval **Homework 1**
due Thursday, September 14

1. Use truth tables to determine whether

$$P \Rightarrow (Q \vee R)$$

and

$$(P \wedge \sim Q) \Rightarrow R$$

are equivalent.

For each of the following statements:

(a) write the negation of the statement;

(b) write what the original statement means using ordinary language;

(c) write what the negation of the statement means using ordinary language; and

(d) determine whether the original statement is true, or if the negation is true, for each of the following sets S: positive real numbers; integers; rational numbers. For this part, explain how you know your answer is correct.

2. $(\forall x \in S)(\exists y \in S)(x + y = 0)$

3. $(\exists a \in S)(\forall b \in S)(ab = 0)$